

**APPENDIX A**  
**Clean Copy of Pending Claims**

1. A method of detecting a low power condition in a satellite navigation system, comprising:
  - receiving at least one global positioning satellite radio signal;
  - determining a signal-to-noise ratio of the satellite radio signal;
  - calculating from the signal-to-noise ratio a low-power condition error contribution; and
  - calculating a total error based at least in part on the low-power condition error contribution.
  
2. The method of claim 1, wherein determining the signal-to-noise ratio includes:
  - measuring a wide band power of the satellite radio signal over a first time period;
  - measuring a narrow band power of the satellite radio signal over a second time period;
  - calculating an estimated signal-to-noise ratio based on the narrow band power and the wide band power.
  
3. The method of claim 2, wherein measuring a wide band power includes averaging the wide band power over the first time period to obtain a value  $P_w$ , and wherein measuring a narrow band power includes averaging the narrow band power over the second time period to obtain a value  $P_n$ .
  
4. The method of claim 3, wherein the first time period has a length  $T$ , the second time period has a length that is  $M$  times as long as  $T$ , and the signal-to-noise ratio  $S/N_0$  is calculated according to the following equation.

$$S/N_o = 10 \log_{10} \left[ \frac{1}{T} \frac{P_n - P_w}{MP_w - P_n} \right]$$

5. The method of claim 2, wherein calculating an estimated signal-to-noise ratio includes calculating a lower confidence limit.

6. The method of claim 5, wherein determining a signal-to-noise ratio comprises determining a lower confidence limit of the signal-to-noise ratio.

7. The method of claim 6, wherein determining a lower confidence limit includes calculating an estimated signal-to-noise ratio and subtracting a confidence offset from the estimated signal-to-noise ratio.

8. The method of claim 7, wherein the confidence offset  $dS/N_{o\_low}$  is determined by the following equation:

$$P_{lim} = \int_{-dS/N_{o\_low}}^{\infty} pdf(x) dx.$$

10. The method of claim 1, further comprising determining whether the total error exceeds an alert limit, and issuing an alert if the error exceeds the alert limit.

11. A method of detecting a low power condition in a local area augmentation system, comprising:

receiving a global positioning satellite radio signal;

determining a navigational measurement based at least in part on the received radio signal;  
determining a signal-to-noise ratio of the received radio signal; [[and]]  
determining an error in the navigational measurement based at least in part on the signal-to-noise ratio; and  
determining whether the error exceeds an alert limit, and issuing an alert if the error exceeds the alert limit.

12. The method of claim 11, wherein determining the signal-to-noise ratio includes:  
measuring a wide band power of the satellite radio signal over a first time period;  
measuring a narrow band power of the satellite radio signal over a second time period;  
determining a signal-to-noise ratio based on the narrow band power and the wide band power.

13. The method of claim 12, wherein measuring a wide band power includes averaging the wide band power over the first time period to obtain the value  $P_w$ , and wherein measuring a narrow band power includes averaging the narrow band power over the second time period to obtain the value  $P_n$ .

14. The method of claim 13, wherein the first time period has a length  $T$ , the second time period has a length that is  $M$  times as long as  $T$ , and the signal-to-noise ratio  $S/No$  is calculated according to the following equation.

$$S/No = 10 \log_{10} \left[ \frac{1}{T} \frac{P_n - P_w}{MP_w - P_n} \right]$$

15. The method of claim 11, wherein determining a signal-to-noise ratio includes calculating a lower confidence limit.

16. The method of claim 15, wherein determining a signal-to-noise ratio comprises determining a lower confidence limit of the signal-to-noise ratio.

17. The method of claim 16, wherein determining a lower confidence limit includes calculating an estimated signal-to-noise ratio and subtracting a confidence offset from the estimated signal-to-noise ratio.

18. The method of claim 17, wherein the confidence offset  $dS/No_{low}$  is determined by the following equation:

$$P_{lim} = \int_{-dS/No_{low}}^{\infty} pdf(x) dx.$$

20. In a local area augmentation system, a system for detecting a low-power condition comprising:

- a wide band power estimator operative to measure an average wide band power;
- a narrow band power estimator operative to measure an average narrow band power;
- a signal-to-noise ratio module operative to calculate a signal-to-noise ratio from the estimated wide band power and the estimated narrow band power; and
- a low-power error module operative to calculate, from the signal-to-noise ratio, an error contribution attributable to a low-power condition.

21. The system of claim 20, wherein:
- the signal-to-noise ratio module further comprises confidence limit logic operative to determine a lower confidence limit; and
- wherein the signal-to-noise ratio calculated by the signal-to-noise ratio logic is the lower confidence limit.
22. The system of claim 21, further comprising:
- a total error module operative to calculate a total error based at least in part on the low-power condition error contribution; and
- alert logic operative to determine whether the total error exceeds an alert limit and to issue an alert if the error exceeds the alert limit.